FEDERAL-STATE
COOPERATIVE SNOW SURVEYS and IRRIGATION WATER FORECASTS

for

ARIZONA

March 15, 1949

by

Division of Irrigation, Soil Conservation Service
United States Department of Agriculture

Data included in this report were obtained by the agency named above in cooperation with the Federal, State, and local organizations listed on the last page of this report.

FEDERAL-STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

FOR

ARIZONA

Report Prepared

by

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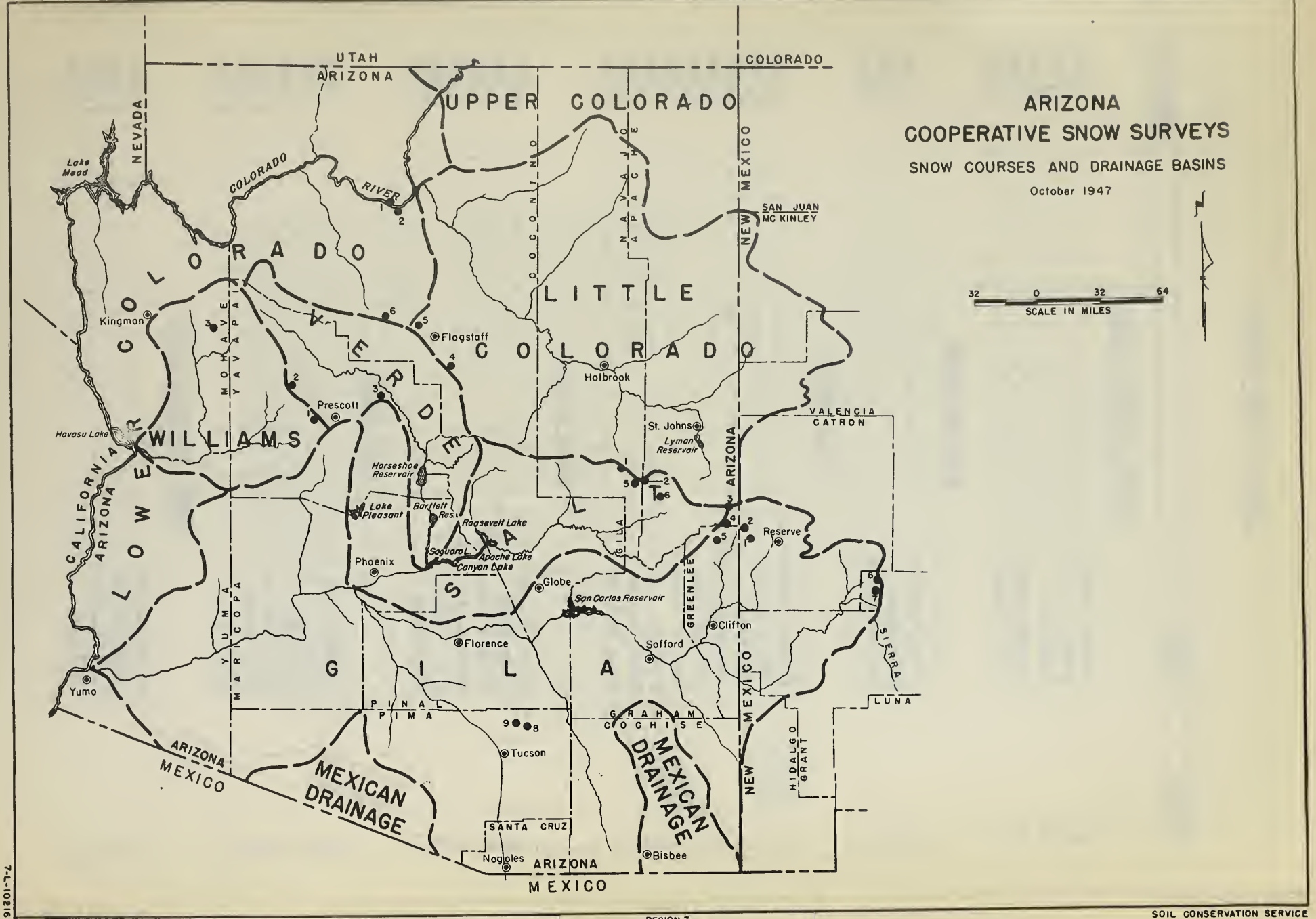
ARIZONA
COOPERATIVE SNOW SURVEYS
SNOW COURSES AND DRAINAGE BASINS
October 1947
SCALE IN MILES
32 0 32 64
UTAH
ARIZONA
COLORADO
NEVADA
NEW MEXICO
UPPER COLORADO
LITTLE COLORADO
LOWER COLORADO
GILA
VERDE
SALT
MEXICAN DRAINAGE
MEXICAN DRAINAGE
Lake Mead
COLORADO RIVER
SAN JUAN
MC KINLEY
VALENCIA
CATRON
SIERRA
LUNA
HIDALGO
GRANT
GREENLEE
COCONINO
NAVAJO
APACHE
MOHAVE
YAVAPAI
WILLIAMS
YUMA
MARICOPA
PINAL
PIMA
GRAHAM
COCHISE
SANTA CRUZ
CALIFORNIA
Kingman
Flagstaff
Holbrook
Prescott
St. Johns
Lyman Reservoir
Havasu Lake
Horseshoe Reservoir
Lake Pleasant
Bartlett Res.
Roosevelt Lake
Saguaro L.
Apache Lake
Canyon Lake
Phoenix
Globe
San Carlos Reservoir
Reserve
Clifton
Sofford
Florence
Yuma
Tucson
Nogoles
Bisbee
ARIZONA
MEXICO
NEW MEXICO
ARIZONA
MEXICO

INDEX TO SNOW COURSES

NUMBER		NAME	ELEVATION
		LITTLE COLORADO RIVER	
1.		Forest Dale	6,000
2.		McNary	7,200
3.		Nutrioso	8,500
4.		Mormon Lake	7,350
5.		Fort Valley	7,350
		WILLIAMS RIVER	
1.		Iron Springs	6,200
2.		Camp Wood	5,700
3.		Willow Ranch	5,000
		GILA RIVER	
1.	(N.M.)	Frisco Divide	8,000
2.	(N.M.)	State Line	8,000
3.		Nutrioso	8,500
4.		Coronado Trail	8,000
5.		Beaver Head	8,000
6.	(N.M.)	Taylor Creek	7,850
7.	(N.M.)	Inman	7,800
8.		Rose Canyon	7,300
9.		Bear Wallow	8,100
		VERDE RIVER	
1.		Iron Springs	6,200
2.		Camp Wood	5,700
3.		Mingus Mountain	7,100
4.		Mormon Lake	7,350
5.		Fort Valley	7,350
6.		Chalender	7,100
		SALT RIVER	
1.		Forest Dale	6,000
2.		McNary	7,200
3.		Nutrioso	8,500
4.		Coronado Trail	8,000
5.		Milk Ranch	7,000
6.		McKay	8,250
		LOWER COLORADO RIVER	
1.		Bright Angel	8,400
2.		Grand Canyon	7,500
5.		Fort Valley	7,350
6.		Chalender	7,100

WATER SUPPLY OUTLOOK

Arizona

March 15, 1949

* *
* March 15 snow surveys show excellent *
* prospects for runoff from the main *
* snow fed streams in Arizona during the *
* 1949 season. Melting snow during the *
* current snow season has increased re- *
* servoir storage over 400 per cent. *
* Continued storms are needed to produce *
* necessary hold over storage. Soil *
* mantle at higher elevations is satur- *
* ated while irrigated valleys are dry. *
* *

Precipitation Since February 1, precipitation throughout the upper watersheds of Arizona is below normal. On the mountains of Little Colorado, Verde and Salt River Watersheds, precipitation since February 1, is about 50 percent of normal while Gila River Watershed has received only about 30 percent. Soil moisture conditions in the mountains is excellent while the irrigated valleys are dry.

Snow Cover Although recent precipitation has been subnormal, snow water content remaining from the heavy winter storms continued high. Snow surveys on Little Colorado and Gila show about 250 percent of normal snow stored water while on the Salt it was about 200 percent. Snow cover on the Verde, Williams and other snow fed streams was much better than average.

Runoff Runoff as measured at key stations continues high. Saturated soil at the higher elevations guarantees a high water yield from future snow melt. During February, Verde River discharged about 190 percent of the median while Salt River was about 170 percent. Gila River was about 390 percent with future prospects very good for runoff from the residual snow cover.

Reservoir Storage Although reservoir storage in Arizona has made an excellent recovery from the record low of last fall, additional storms are necessary to furnish badly needed hold over storage. San Carlos Reservoir, which was empty on October 1, 1948, contained about 242,000 acre feet on March 15, 1949. This is about the same as the past ten year average and the greatest amount stored on this date since 1944. Salt River Reservoirs contain about twice the amount of water stored last fall but only about 50 percent of the past ten year average. Verde River reservoirs appear to be in excellent condition. Horseshoe spilled for the first time and Bartlett, storing about 50 percent of capacity on March 15, will continue to receive high inflow from heavy snow melt. Lake Pleasant with 28,000 acre feet contained the greatest storage on this date since 1942. Lake Mead with 17,950,000 acre feet contained about 1,000,000 acre feet less than last year on this date.

STATUS OF RESERVOIR STORAGE, March 15, 1949

BASIN and STREAM	RESERVOIR	USABLE CAPACITY (Thous. A.F.)	THOUSANDS ACRE FEET IN STORAGE about Mar. 15				
			1949	1948	1947	1946	10-yr. avg. 1938-194[illegible]
Agua Fria	Lake Pleasant	179	28	1	3	4	31
Colorado	Lake Havasu	688	571	593	621	616	555[illegible]
Colorado	Lake Mead	27,935	17,950	18,888	16,431	18,056	19,360[illegible]
Gila	San Carlos	1,200	242	6	18	29	249
Salt	Salt River[c]	1,771	467	247	432	671	866
Verde	Bartlett	179	92	17	24	2	82[b]
Verde	Horseshoe	67	64	1	10	9	

a - Average for years 1939 - 1947

b - Average for years 1941 - 1947

c - Includes Roosevelt, Apache, Saguaro and Canyon Lakes

ARIZONA SNOW SURVEYS MARCH 15, 1949

LOCATION							SNOW COVER MEASUREMENTS					
								Water Content (inches) Same Approx. date			Past Record	
DRAINAGE BASIN and SNOW COURSE	Number	Sec.	Twp.	Rge.	Elev.	Date of Survey	Snow Depth (inches)	1949	1948	1947	Years of Record	Av. Water Content (inches)
LITTLE COLORADO RIVER												
Forest Dale	1	2	9N	21E	6000	3/15	0	0	1.3	0	9	0.4
McNary	2	14	8N	23E	7200	3/15	0	0	4.1	0	9	1.6
Nutrioso	3	23	6N	30E	8500	3/13	21.6	8.8	4.8	0	9	1.5
Mormon Lake	4	13	18N	8E	7350	3/15	39.8	16.6	11.4	0	2	5.7
Fort Valley	5	22	22N	6E	7350	3/15	21.5	8.8	2.0	0	2	1.0
WILLIAMS RIVER												
Iron Springs	1	22	14N	3W	6200	3/12	6.4	3.4	0	0	3	0
Camp Wood	2	3	16N	6W	5700	3/15	2.2	0.8	0	0	3	0.1
Willow Ranch	3	16	21N	11W	5000		No Report		0	0	3	0
GILA RIVER												
Frisco Divide*	1	31	6S	20W	8000	3/13	7.5	2.9	5.6	0	9	1.6
State Line	2	6	6S	21W	8000	3/13	11.0	4.7	5.1	0	9	2.3
Nutrioso	3	23	6N	30E	8500	3/13	14.4	5.4	4.8	0	9	1.5
Coronado Trail	4	26	5N	30E	8000	3/13	21.6	8.8	6.1	0	9	3.0
Beaver Head	5	13	4N	30E	8000	3/15	11.1	5.6	6.0	0	9	2.7
Taylor Creek	6	20	10S	10W	7850		No Report		2.2	0	7	0.4
Inman	7	6	11S	10W	7800		No Report		2.3	0	3	0.8
Rose Canyon	8	15	12S	16E	7300	3/14	0	0	1.3	New Course		
Bear Wallow	9	6	12S	16E	8100	3/14	10.8	3.8	3.0	" "		

ARIZONA SNOW SURVEYS MARCH 15, 1949

LOCATION							SNOW COVER MEASUREMENTS					
								Water Content (inches)			Past Record	
								Same Approx. date				
DRAINAGE BASIN and SNOW COURSE	Number	Sec.	Twp.	Rge.	Elev.	Date of Survey	Snow Depth (inches)	1949	1948	1947	Years of Record	Av. Water Content (inches)
VERDE RIVER												
Iron Springs	1	22	14N	3W	6200	3/12	6.4	3.4	0	0	3	0
Camp Wood	2	3	16N	6W	5700	3/15	2.2	0.8	0	0	3	0.1
Mingus Mountain	3	3	15N	2E	7100		No Report		2.3	0	2	1.2
Mormon Lake	4	13	18N	8E	7350	3/15	39.8	16.6	11.4	0	2	5.7
Fort Valley	5	22	22N	6E	7350	3/15	21.5	8.8	2.0	0	2	1.0
Chalender	6	27	22N	3E	7100	3/15	20.7	8.4	4.2	0	2	2.1
SALT RIVER												
Forest Dale	1	2	9N	21E	6000	3/15	0	0	1.3	0	9	0.4
McNary	2	14	8N	23E	7200	3/15	0	0	4.1	0	9	1.6
Nutrioso	3	23	6N	30E	8500	3/13	14.4	5.4	4.8	0	9	1.5
Coronado Trail	4	26	5N	30E	8000	3/13	21.6	8.8	6.1	0	9	3.0
Milk Ranch	5	28	8N	23E	7000	3/15	0	0	1.2	0	8	0.7
LOWER COLORADO												
Bright Angel	1	34	33N	3E	8400	3/15	43.3	17.2	7.8	7.6	2	7.7
Grand Canyon	2	21	30N	4E	7500	3/15	13.3	5.6	1.5	0	2	0.8
Fort Valley	5	22	22N	6E	7350	3/15	21.5	8.8	2.0	0	2	1.0
Chalender	6	27	22N	3E	7100	3/15	20.7	8.4	4.2	0	2	2.1

* Course revised 1948

LIST OF SNOW SURVEYORS

SNOW COURSE	SURVEYOR
Forest Dale	W. E. Fair
McNary	W. E. Fair
Nutrioso	R. L. Diggs
Mormon Lake	M. F. Greaves
Fort Valley	A. P. Loska
Iron Springs	Ernest Saxby
Camp Wood	Mrs. C.C. Merritt
Willow Ranch	Tiny Miller
Frisco Divide	Dean M. Earl
Coronado Trail	R. L. Diggs
Beaver Head	Jes Burke
Taylor Creek	F.M. Inman
Inman	F.M. Inman
Mingus Mountain	Harold Linn
Chalender	Schroeder & Rogers
Milk Ranch	W. E. Fair
State Line	Dean M. Earl
Rose Canyon	Wm. Hughes
Bear Wallow	Wm. Hughes
Bright Angel	S. Brown & J. Brown
Grand Canyon	Lauzon & Kennedy

The following organizations cooperate in the Arizona snow survey work:

STATE

Nevada Agricultural Experiment Station
Reno, Nevada

FEDERAL

Department of Agriculture
Forest Service
Apache Forest
Coconino Forest
Coronado Forest
Gila Forest
Kaibab Forest
Prescott Forest
Southwestern Forest and Range Expt. Station, Fort Valley, Arizona
Soil Conservation Service
Division of Irrigation

Department of Commerce
Weather Bureau
Arizona Section

Department of Interior
Bureau of Reclamation
Region III
Geological Survey
Arizona District
Indian Service
Fort Apache Reservation
National Park Service
Grand Canyon National Park

Gila Water Commissioner
Safford, Arizona

IRRIGATION PROJECTS

Salt River Valley Water Users Association
Phoenix, Arizona

San Carlos Irrigation and Drainage District
Coolidge, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.